200700044

No.

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

NDSU Research Foundation

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR [illegible]TING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE [illegible]URPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT [illegible]BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

OAT

'Beach'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of Washington, D.C. this seventh day of September, in the year two thousand and seven.*

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of

REPRODUCE LOCALLY. *Include form number and date on all reproductions*

Form Approved - OMB No. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER
NDSU Research Foundation

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME
ND951394

3. VARIETY NAME
'Beach'

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
C/O Executive Director
1735 NDSU Research Park Drive
Fargo, ND 58105-5002

5. TELEPHONE *(include area code)*
701-231-8931

6. FAX *(include area code)*
701-231-6661

FOR OFFICIAL USE ONLY

PVPO NUMBER
200700494

FILING DATE
NOVEMBER 28, 2006

7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.)*
NDSU Research Foundation 501(c)(3) Corp

8. IF INCORPORATED, GIVE STATE OF INCORPORATION
ND

9. DATE OF INCORPORATION
May 1, 1989

FEES RECEIVED

FILING AND EXAMINATION FEES:
$ 4,382.00
DATE 11/28/06

CERTIFICATION FEE:
$ 768.00
DATE 7/24/07

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*

Michael McMullen
Dept. of Plant Sciences
NDSU
P.O. Box 5051
Fargo, ND 58105-5051

Dale Zetocha, Executive Director
NDSU Research Foundation
1735 NDSU Research Park Drive
P.O. Box 5002
Fargo, ND 58105-5002

11. TELEPHONE (Include area code)
701-231-8165

12. FAX (Include area code)
701-231-8474

13. E-MAIL
michael.mcmullen@ndsu.edu dzetocha@ndsurf.org

14. CROP KIND *(Common Name)*
Oat

16. FAMILY NAME *(Botanical)*
Gramineae, Aveneae

15. GENUS AND SPECIES NAME OF CROP
Avena sativa

17. IS THE VARIETY A FIRST GENERATION HYBRID?
☐ YES ☑ NO

18. DOES THE VARIETY CONTAIN ANY TRANSGENES? *(OPTIONAL)*
☐ YES ☑ NO
IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERICALIZATION. _____

19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED
(Follow instructions on reverse)

a. ☑ Exhibit A. Origin and Breeding History of the Variety
b. ☑ Exhibit B. Statement of Distinctness
c. ☑ Exhibit C. Objective Description of Variety
d. ☑ Exhibit D. Additional Description of the Variety *(Optional)*
e. ☑ Exhibit E. Statement of the Basis of the Owner's Ownership
f. ☑ Exhibit F. Declaration Regarding Deposit
g. ☑ Voucher Sample *(3,000 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)*
g. ☑ Filing and Examination Fee ($4,382), made payable to "Treasurer of the United States" *(Mail to the Plant Variety Protection Office)*

20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act)*
☐ YES *(If "yes", answer items 21 and 22 below)* ☑ NO *(If "no", go to item 23)*

21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES?
☐ YES ☐ NO
IF YES, WHICH CLASSES? ☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☐ NO
IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS.
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED
(If additional explanation is necessary, please use the space indicated on the reverse.)

23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES?
☑ YES ☐ NO
IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. *(Please use space indicated on reverse.)*

24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT *(PLANT BREEDER'S RIGHT OR PATENT)*?
☐ YES ☑ NO
IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. *(Please use space indicated on reverse.)*

25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF OWNER		SIGNATURE OF OWNER	
Dale Zetocha			
NAME *(Please print or type)*		NAME *(Please print or type)*	
Dale Zetocha			
CAPACITY OR TITLE	DATE	CAPACITY OR TITLE	DATE
Executive Director	11/27/06		

(See reverse for instructions and information collection burden statement)

GENERAL INSTRUCTIONS: To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be **received** in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E, F; (3) for a tuber reproduced variety, verification that a viable *(in the sense that it will reproduce an entire plant)* tissue culture will be deposited and maintained in an approved public repository; and (4) payment by credit card or check drawn on a U.S. bank for $4,382 ($518 filing fee and $3,864 examination fee), payable to "Treasurer of the United States" *(See Section 97.6 of the Regulations and Rules of Practice).* **NEW:** With the application for a seed reproduced variety **or by direct deposit soon after filing**, the applicant must provide at least 3,000 viable untreated seeds of the variety *per se*, and for a hybrid variety at least 3,000 untreated seeds of each line necessary to **reproduce** the variety. Partial applications will be held in the PVPO for not more than 90 days; then returned to the applicant as un-filed. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a payment by credit card or check payable to "Treasurer of the United States" in the amount of $768 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. *(See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)*

Plant Variety Protection Office
Telephone: (301) 504-5518 **FAX:** (301) 504-5291
General E-mail: PVPOmail@usda.gov
Homepage: http://www.ams.usda.gov/science/pvpo/PVPindex.htm

SPECIFIC INSTRUCTIONS:
To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and **provide evidence** that the permanent name of the application variety (even if it is a parental, inbred line) has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: U.S. Department of Agriculture, Agricultural Marketing Service, Livestock and Seed Programs, **Seed Regulatory and Testing Branch**, 801 Summit Crossing Place, Suite C, Gastonia, North Carolina 28054-2193 Telephone: (704) 810-8870. http://www.ams.usda.gov/lsg/seed.htm.

ITEM

19a. Give:
(1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
(2) the details of subsequent stages of selection and multiplication;
(3) evidence of uniformity and stability; and
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified

19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:

(1) identify these varieties and state all differences objectively;
(2) attach replicated statistical data for characters expressed numerically and demonstrate that these are clear differences; and
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.

19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.

19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, *etc.*

19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.

20. If "Yes" is specified *(seed of this variety be sold by variety name only, as a class of certified seed)*, the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. *(See Regulations and Rules of Practice, Section 97.103).*

23. *See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.*

24. *See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.*

22. CONTINUED FROM FRONT *(Please provide a statement as to the limitation and sequence of generations that may be certified.)*

23. CONTINUED FROM FRONT *(Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)*

'Beach' was distributed to the North Dakota Crop Improvement Association under contract for seed increase. The first certified seed tag to a crop improvement grower was issued January 9, 2006. 'Beach' was first evaluated under a Material Transfer Agreement in Canada, March 21, 2005. Material Transfer Agreements were used since as well and were for testing and evaluation only. No seed sales were authorized.

24. CONTINUED FROM FRONT *(Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)*

19 a. Exhibit A. Origin and Breeding History of 'Beach'

Pedigree

Beach was developed with the pedigree ND891126/ND914832

ND891126 = ND850474/ND861383

ND850474 = ND810677/'DUMONT'

ND810677 = RPB120-73/RL3038//M22/'Kelsey'

M22 = 'Avon'//'Rodney'/'Milford'

RL 3038 was provided by R. McKenzie, Agriculture and Agri-food Canada, possesses genes *Pc-38*, *Pc-39*, *Pg-2*, and *Pg-13* and was derived from a complex pedigree that included 'Rodney' and 'Pendek'

ND861383 = 'Valley'/'Dumont'

ND914832 = ND863437/IL81-2570

ND863437 = W80-19/SO81136

W80-19 = Germplasm line with unknown parentage received from Agriculture and Agri-food Canada, Winnipeg that possessed crown rust resistance genes Pc-55 and Pc-56.

SO81136 = 'Otana'/'Cascade'

IL81-2570 = IL75-1062/P 7135A1-1-8-4

IL75-1062 = 'Coker-227'//'Clintford'/'Portal'

P 7135A1-1-8-4 =
(CI 7684-Putnam-Albion) Sel./'Allen'//'Noble'/'Stout'

SO81136 = Otana/Cascade

ND863384 = SD800043/W80-19
SD800043 = 'Noble'//'Dal'/'Nodaway 70'

Experimental Designation ND951394

19 a. Exhibit A. Origin and Breeding History of 'Beach'

Breeding Method –
Modified single seed descent and pedigree method

Selection and Multiplication –	**Stage of development**	**Selection Criteria**
1991 Fall greenhouse	Final cross	
1992 Spring greenhouse	F_1	F_1 plants were uniform and seed from 3 plants was bulked to produce F_2 population
1992 Field	F_2 selection of single panicle	F_2 population was segregating for crown rust and stem rust resistance in the field. Plants exhibiting multiflorous naked seeded phenotype and resistant to both stem rust and stem rust were selected for advancement.
1992 Fall greenhouse	F_3 single seed descent accompanied by screening for seedling resistance to critical races of stem and crown rust.	Seedlings were inoculated with composite of crown rust races that were virulent on Pc-38 and Pc-39 and with stem rust race NA27. Seedlings exhibiting a resistant infection type were grown to maturity and seed from individual resistant F_3 plants that exhibited the naked seed characteristic were advanced to the field.
1993 Field	F_4 planted in hill plots from seed of single $F_{3:4}$ panicle F_4 panicles harvested from selected hill plots	Panicles from plants in hill plots exhibiting the naked seed characteristic, stem rust and crown rust resistance, along with resistance to lodging and tolerance to barley yellow dwarf virus were harvested to provide seed for advancement to the F_5.

19 a. Exhibit A. Origin and Breeding History of 'Beach'

Breeding Method –
Modified single seed descent and pedigree method

Selection and Multiplication –	**Stage of development**	**Selection Criteria**
1994 Field	Seed from F_4 panicles were planted to produce paired hill plots. A selected paired hill plot was harvested in bulk to produce an $F_{4:5}$ breeding line that was subsequently designated ND951394 that became the source of Beach breeder's seed.	Hill plots exhibiting homogeneity of crown rust resistance and stem rust resistance were selected for harvest. Lodging resistance, expression of the naked seed characteristic, and visual selection of kernel morphology were considered to further select plots that were identified for harvest. Harvested lines were evaluated as seedlings in the greenhouse using stem rust race NA27 and a composite of crown rust races to identify lines homogeneous for resistance to these diseases. These selected lines were advanced to the F_6 generation.
1995 Field	F_6 Preliminary screening trial – Fargo location, one replication with repeating checks.	Selection was based on lodging resistance, medium heading date, high grain yield, high test weight, expression of naked seed characteristic, and resistance to stem and crown rust in the field. Stem rust and crown rust seedling resistance evaluation was repeated in the greenhouse to identify homogeneous resistant lines.
1996 Field	F7 Preliminary Yield Trial (PYT) – Two ND locations, two replications per location ND951394 assigned to line.	Selection was based on lodging resistance, medium heading date, high grain yield, high test weight, and resistance to stem and crown rust in the field. Seedling stem and crown rust.

19 a. Exhibit A. Origin and Breeding History of 'Beach'

Breeding Method –
Modified single seed descent and pedigree method

Selection and Multiplication –	**Stage of development**	**Selection Criteria**
1997 Field	F_8 Early Advanced Yield Trial (EAYT), 4 ND locations with 3 replications per location.	Evaluation was based on lodging resistance, medium heading date, high grain yield, high test weight, groat percentage, low proportion of kernels passing through a 5/64" sieve, and resistance to stem and crown rust in the field. Stem rust and crown rust seedling resistance was evaluated in the greenhouse.
1998 Field	F_9 Tri-State Oat Nursery grown at ten locations across ND, SD, and MN with replication at each location. Drill-strip increase plot planted for seed increase and purification. Variants were removed.	ND951394 that became Beach was determined to produce high grain yield and high test weight. Stem rust and crown rust resistance evaluation at many locations indicated ND951394 had stable resistance to stem rust race NA27, but is susceptible to NA67. Stem rust and crown rust seedling resistance evaluation was repeated in the greenhouse.

19 a. Exhibit A. Origin and Breeding History of 'Beach'

Breeding Method –
Modified single seed descent and pedigree method

Selection and Multiplication –	**Stage of development**	**Selection Criteria**
1999 ND Field	F_{10} NDOVT at 10 locations and Uniform Midseason Oat Performance Nursery at 21 locations Increase and purification in drill strip at Fargo	ND951394 that became Beach was determined to produce high grain yield, medium high test weight, and More than 99% naked seed Stem rust and crown rust resistance was evaluated at many locations and ND951394 was identified to have moderate crown rust resistance and resistance to stem rust race NA27, but issusceptible to stem rust race NA67.
2000 Field	F_{11} NDOVT at 10 locations and UMOPN at 20 locations Increase and purification in drill strip at Fargo.	Evaluation continued for all characteristics evaluated in 1999.
2001 Field	F_{12} NDOVT	Evaluation continued for all characteristics evaluated in 2000
2002 Field	F_{13} NDOVT 10 locations	Evaluation continued for all characteristics evaluated in 2001
2003 Field	F_{14} NDOVT 10 locations Preliminary large increase by Foundation Seed Stocks form F_{13} Breeder's Seed	Evaluation continued for all characteristics evaluated in 2002
2004 Field	F_{15} NDOVT 10 locations Foundation seed increase and release as Beach	Evaluation continued for all characteristics evaluated in 2003

19 a. Exhibit A. Origin and Breeding History of 'Beach'

Evidence of uniformity and stability:

Beach has been observed to be uniform and stable for stem rust resistance and crown rust resistance for ten generations from the original $F_{4:5}$ that was designated ND951395 in 1995 until release in 2004. Beach may produce tall variants (10 cm taller than the bulk of the population) that comprise less than 1% of the plants under some environmental conditions. The frequency of these variants has not changed for ten generations since they were observed in the F_8 generation in 1997. Beach appears otherwise unform and stable.

The type and frequency of variants during reproduction and multiplication and how these variants may be identified:

The tall variants comprise less than 1% of the Beach plants. The tall variants are conspicuous in environments where they are expressed..

18B. Exhibit B. Novelty Statement.

'Beach' is a tall late spring oat with white lemma and palea that is most similar to 'Otana' and 'Morton' in appearance. Morton is resistant to most races of crown rust present in North Dakota (ND), while Otana is considered susceptible to most crown rust isolates. Morton possesses crown rust resistance derived from IA B605X (temporary designation of resistance gene is Pc-IAB) that confers resistance to most races of crown rust prevalent in North Dakota as indicated by field reactions and by seedling reaction (Exhibit D, Tables 7 and 8) to critical crown rust pathotypes. Beach does not express a high level of resistance to the new crown rust races prevalent in ND since the new races are virulent on crown rust resistance genes *Pc-38* and *Pc-39* that are present in Beach as indicated by a fleck (;) seedling reaction when inoculated with CR13 and Cr36 (Table 8). Beach produces a infection type 3 or 4 when inoculated with pathotypes virulent on *Pc-38* and *Pc-39*. Beach produces a moderately resistant to moderately resistant (MR-MS) reaction to crown rust in the field in ND (Table 7) while Otana produces a susceptible reaction and Morton produced a resistant reaction when crown rust infection was present on Morton in the field. Otana lacks Pc-IAB, Pc-38, and Pc-39 and is consequently susceptible to all four of the critical pathotypes used (Table 8). Beach and Morton possess resistance to stem rust race NA27 conferred by *Pg-13* that produces an IT 2 when seedlings are inoculated with this race (Exhibit D, Table 6). Resistance to stem rust race NA27 conferred by *Pg-13* distinguishes Beach and Morton from other USA cultivars with white hulls. Otana lacks *Pg-13* and is susceptible to stem rust race NA27.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

Exhibit C

OBJECTIVE DESCRIPTION OF VARIETY
Oat (*Avena* spp.)

NAME OF APPLICANT (S)	TEMPORARY OR EXPERIMENTAL DESIGNATION	VARIETY NAME
	ND951394	Beach
ADDRESS (*Street and No. or RD No., City, State, Zip Code, and Country*)		[redacted] PVPO NUMBER [redacted]

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (i.e. 0 8 9 or 0 9) when the number is either 99 or less or 9 or less.

1. SPECIES:

[X] 1 = *Sativa* 2 = *Byzantina* 3 = Other (Specify) _____

2. GROWTH HABIT:

[3] 1 = Winter 2 = Semi-Winter 3 = Spring

[3] Juvenile Growth: 1 = Prostrate 2 = Semi-Prostrate 3 = Erect

3. MATURITY: (50% Flowering)

[6 7] Number of days

[2] No. Days Earlier Than * Otana

Same as Check * Morton

[3] No. of Days Later Than * Hytest

[4] Season:

1 = Very Early (Jaycee) 2 = Early (Nodaway 70) 3 = Midseason (Clintford)
4 = Late (Lodi) 5 = Very Late (Gerry) 6 = Extremely Late (Mackinaw)

4. PLANT HEIGHT: (From Soil Level to Top of Head)

[1 1 1] cm Tall

[3] cm Shorter Than * Morton

Same as Check * HiFi

[1 6] cm Taller Than * Killdeer

* Relative to a Commercial Variety Grown in the Same Trial

5. STEM:

[2] Diameter: 1 = Fine (Kherson) 2 = Medium (Clintford) 3 = Coarse (Nodaway 70)

[1] Hairiness at Upper Culm Nodes: 1 = Hairless 2 = Hairy

[1] Mature Stem Color 1 = Yellow 2 = Reddish

6. LEAF: (Leaf Color: The Royal Horticultural Society's or any recognized color chart should be used to determine the leaf color of the described variety.)

[1] Carriage: 1 = Drooping (Random) 2 = Erect (Walken)

[3] Color: 1 = Yellow Green 2 = Light Green 3 = Dark Green 4 = Blue Green

[4] mm Width (First leaf below flag leaf) [1] Leaf Margin: 1 = Glabrous 2 = Ciliate

[2] Ligule: 1 = Absent 2 = Present [1] Leaf Sheath: 1 = Hairless 2 = Hairy

7. HEAD:

[1] Panicle Shape: 1 = Equilateral 2 = Intermediate 3 = Side Panicle (Unilateral)

[1] Attachment of Lower Whorl of Branches: 1 = First Node 2 = Second Node (False Node)

[2] Panicle Size: 1 = Samll (Yancey) 2 = Medium (Walken) 3 = Large (Markton)

[2] Panicle Width: 1 = Narrow (Gopher) 2 = Midbroad (Yancy) 3 = Broad (Nodaway 70)

[1 8] cm Panicle Length [1 6] Number of Branches [5] Number of Whorls of Branches

[2] Position of Branches: 1 = Ascending (Yancey) 2 = Spreading (Cayuse) 3 = Drooping (Markton) 4 = Pectinate (White Tarter) 5 = Confused (Storm King

8. RACHIS:

[2] 1 = Recurved (Yancey) 2 = Erect (Walken) [3.8] mm Second Floret Rachilla Segment Length

[1] Second Floret Rachilla Segment: 1 = Hairless 2 = Hairy [ ] Rachilla Hairs: 1 = Short 2 = Long

9. SPIKELET:

[3] Spikelet Separation by: 1 = Abscission 2 = Semi-Abscission 3 = Fracture

[2] Floret Separation by: 1= Disarticulation 2 = Heterofracture 3 = Basifracture

[1.8] Florets per Spikelet (Mean no.)

10. GLUMES: (Glume Color: The Royal Horticultural Society's or any recognized color chart should be used to determine the leaf color of the described variety.)

[7] mm Width [2 1] mm Length [ ] No. of Veins on Glumes [1] Color: 1 = White 2 = Yellow 3 = Red 4 = Striped

11. LEMMA: (Lemma Color: The Royal Horticultural Society's or any recognized color chart should be used to determine the leaf color of the described variety.)

[1 4] mm Length [1] Color: 1 = White 2 = Yellow 3 = Red 4 = Gray 5 = Black

[1] Hairiness of Dorsal Surface: 1 = Hairless 2 = Hairy

12. AWN: (First Floret)

[1] Occurrence: 1 = Absent (Walken) 2 = Infrequent (Yancey) 3 = Common (Chilocco) 4 = Frequent (Random)

[ ] Type: 1 = Non-twisted 2 = Twisted 3 = Twisted Geniculate

[ ] mm Awn Length

11

13. SEED:

[1] Florescence Under Ultraviolet Light: 1 = Florescent 2 = Non-florescent

[1] Basal Hair: 1 = Absent (Florida 501) 2 = Absent to Few (Yancey) 3 = Few to Several (Lee) 4 = Several to Numerous (Florilee) 5 = Numerous (Red Rustproof)

[ ].[ ] mm Basal Hair Length

[34].[9] gms per 1000 Seeds

[36] mg Groat Weight (Each)

[15].[0] % Groat Protein

[ ][7].[9] % Groat Oil

14. INSECTS: (0 = Not Tested 1 = Susceptible 2 = Resistant)

[0] Cereal Leaf Beetle [0] Bluegrass Billbug [0] Grain Bug (C. Sayi) [0] Nematode (Type)

[0] Green Bug (Biotype) _____ [ ] Other (Specify) _____

15. DISEASE: (0 = Not Tested 1 = Susceptible 2 = Resistant)

[0] Halo Blight [0] Powdery Mildew [0] Septoria Leaf Blotch [0] Soil-Borne Mosaic

[0] Helminthosporium Leaf Blotch [1] Yellow Dwarf Virus [0] Victoria Blight [ ] Other (Specify) _____

Specify Races Tested:

	Races Susceptible	Races Resistant
[1] Crown Rust	CR 192	CR13, CR181, CR185, CR223, CR225
[1] Stem Rust	NA67	NA8, NA16, NA25, NA27, NA28, NA55
[0] Covered Smut		
[1] Loose Smut		MN, WPG

16. INDICATE THE VARIETY YOU BELIEVE MOST CLOSELY TO RESEMBLE THAT SUBMITTED:

CHARACTER	VARIETY	CHARACTER	VARIETY
Plant Tillering	Morton	Leaf Color	HiFi
Leaf Size	Morton	Leaf Carriage	Morton
Seed Color	Morton	Seed Shape	Dumont

COMMENTS:

19d. Exhibit D. Additional Description of Variety

Table 1.

Performance of Beach compared to selected lines in2000-2003 North Dakota Oat Variety Trial 2000-2003.

Cultivar	Grain Yield	Test Wt.	% Groat	Thin Kernels <5/64"	Whole Oat Protein	Head >May 31	Plant Height	Lodge Score	Kernel Wt.	Groat Lipid
	bu/a	lb/bu	%	Proportion	%	Days	cm	0-5	mg	%
AC Assiniboia	118.7	35.4	75.0	0.08	14.9	32.3	103	1.2	38.5	8.8
Ebeltoft	122.3	34.6	73.4	0.11	14.3	33.2	96	1.8	37.0	8.3
HiFi	120.9	36.5	73.6	0.18	14.3	30.5	106	1.7	33.8	8.6
Hytest	95.7	39.4	76.2	0.08	18.0	26.6	111	2.8	35.3	7.8
Jerry	109.4	37.4	73.6	0.11	15.5	27.0	108	1.2	34.3	7.4
Kaufman AC	--	--	--	--	--	30.9			40.3	
Killdeer	126.3	35.2	74.2	0.11	13.2	29.3	95	2.4	33.8	7.8
AC Medallion	115.9	35.5	75.2	0.10	13.9	31.8	107	3.0	36.8	9.3
Morton	118.6	37.4	73.1	0.10	15.3	29.9	114	0.9	33.8	7.3
Otana	107.3	33.8	70.7	0.19	13.6	31.4	110	3.1	30.0	8.0
Paul	86.0	41.8	91.0	0.56	20.3	32.3	108	2.2	23.5	11.0
Youngs	117.5	34.8	74.7	0.08	15.3	31.3	113	2.4	39.0	8.5
Beach	**122.0**	**38.0**	**75.3**	**0.10**	**14.4**	**29.6**	**111**	**0.9**	**34.8**	**9.6**
Loc. Yrs.	33	33	32	31	30	6	4	4	4	4

Table 2

North Dakota Oat Variety Trial 2000-2003 grain yield and test weight summary.

Cultivar	Grain Yield				Test Weight			
	2003 9 Loc. Mean	2002-03 2 yr. Mean	2001-03 3 yr. Mean	2000-03 4 yr. Mean	2003 9 Loc. Mean	2002-03 2 yr. Mean	2001-03 3 yr. Mean	2000-03 4 yr. Mean
	----------bushhels/acre----------				----------lb/bushel----------			
AC Assiniboia	126	105.5	114.2	118.7	36.2	35.0	34.5	35.4
Ebeltoft	134	110.7	118.1	122.3	35.3	34.4	33.8	34.6
HiFi	132	108.8	116.9	120.9	37.1	35.9	35.8	36.5
Hytest	109	91.0	95.9	95.7	40.4	39.4	39.0	39.4
Jerry	126	103.7	109.1	109.4	39.0	37.8	37.2	37.4
AC Kaufman	127	--	--	--	37.0	--	--	--
Killdeer	145	118.0	123.0	126.3	36.2	35.2	34.5	35.2
AC Medallion	127	102.2	112.4	115.9	36.7	35.6	35.1	35.5
Morton	131	107.0	117.6	118.6	37.9	37.0	36.9	37.4
Otana	124	104.2	107.4	107.3	35.2	34.6	33.6	33.8
AC Pinnacle	135	--	--	--	35.6	--	--	--
Reeves	97	--	--	--	39.2	--	--	--
AC Ronald	129	--	--	--	38.3	--	--	--
Youngs	136	110.2	116.0	117.5	35.9	34.7	33.9	34.8
Beach	**135**	**111.2**	**118.5**	**122.0**	**39.2**	**38.0**	**37.4**	**38.0**
Loc. Yrs.	10	16	24.0	33	9.0	14.0	24.0	34.0

19d. Exhibit D. Additional Description of Variety

Table 3
North Dakota Oat Variety Trial 2000-2003 thin oat proportion summary.

Cultivar	2000 9 Loc. Mean	2001 6 Loc. Mean	2002 8 Loc. Mean	2003 8 Loc Mean	2002-03 2 yr. Mean	2001-03 3 yr. Mean	2000-03 4 yr. mean
	---------- Proportion through 5/64" sieve ----------						
AC Assiniboia	0.04	0.08	0.12	0.07	0.10	0.09	0.08
Ebeltoft	0.07	0.07	0.17	0.13	0.15	0.13	0.11
HiFi	0.11	0.17	0.27	0.18	0.23	0.21	0.18
Hytest	0.05	0.07	0.13	0.07	0.10	0.09	0.08
Jerry	0.08	0.10	0.16	0.09	0.13	0.12	0.11
AC Kaufman	--	--	--	0.05	--	--	--
Killdeer	0.07	0.11	0.15	0.10	0.13	0.12	0.11
AC Medallion	0.06	0.09	0.16	0.11	0.13	0.12	0.10
Morton	0.06	0.07	0.17	0.12	0.13	0.12	0.10
Otana	0.14	0.16	0.25	0.20	0.21	0.21	0.19
AC Pinnacle	--	--	--	0.07	--	--	--
Reeves	--	--	--	0.11	--	--	--
AC Ronald	--	--	--	0.16	--	--	--
Youngs	0.05	0.08	0.11	0.09	0.10	0.10	0.08
Beach	**0.06**	**0.09**	**0.14**	**0.11**	**0.12**	**0.11**	**0.10**
Loc. Yrs.	9	6	8	8	16	22	31

Table 4
North Dakota Oat Variety Trial 2000-2002 Groat Percentage Summary.

Cultivar	2000 9 Loc. Mean	2001 6 Loc. Mean	2002 8 Loc. Mean	2003 9 Loc. Mean	2002-03 2 yr. Mean	2001-03 3 yr. Mean	2000-03 4 yr. mean
	---------- Groat Percentage ----------						
AC Assiniboia	76.7	76.2	77.8	70.0	73.7	74.3	75.0
Ebeltoft	74.3	70.8	74.5	73.3	73.9	73.1	73.4
HiFi	74.7	72.7	73.6	73.0	73.3	73.1	73.6
Hytest	77.0	74.8	76.5	75.9	76.2	75.8	76.2
Jerry	75.3	70.2	73.9	73.7	73.8	72.9	73.6
AC Kaufman	--	--	--	77.6	--	--	--
Killdeer	76.0	71.3	74.5	74.0	74.2	73.5	74.2
AC Medallion	75.7	74.3	76.0	74.8	75.3	75.1	75.2
Morton	73.0	73.3	73.6	72.6	73.1	73.1	73.1
Otana	74.0	67.2	71.6	68.9	70.2	69.4	70.7
Paul	89.0	89.5	91.3	93.8	92.6	91.8	91.0
AC Pinnacle	--	--	--	74.6	--	--	--
Reeves	--	--	--	74.8	--	--	--
AC Ronald	--	--	--	75.7	--	--	--
Youngs	74.3	73.2	75.9	74.9	75.4	74.8	74.7
Beach	**75.3**	**75.3**	**76.1**	**74.5**	**75.2**	**75.3**	**75.3**
Loc. Yrs.	9	6	8	9	17	23	32

19d. Exhibit D. Additional Description of Variety

Table 5
2000-2003 ND Oat Variety Trial Whole Oat Protein Summary

Cultivar	2000 7 Loc Mean	2001 6 Loc Mean	2002 8 Loc. Mean	2003 9 Loc Mean	2002-03 2 yr. Mean	2001-03 3 yr. Mean	2000-03 4 yr. mean
	%						
AC Assiniboia	14.5	14.3	14.7	15.9	15.3	15.1	14.9
EBELTOFT	14.6	13.3	14.7	14.3	14.4	14.1	14.3
HiFi	13.8	14.0	14.4	14.8	14.6	14.5	14.3
HYTEST	17.9	17.7	18.3	17.9	18.1	18.0	18.0
JERRY	15.7	14.5	15.8	15.9	15.8	15.5	15.5
Kaufman AC	--	--	--	13.3	--	--	--
KILLDEER	13.8	12.0	13.3	13.5	13.4	13.0	13.2
ACMEDALLION	14.0	12.9	14.5	14.2	14.3	13.9	13.9
Morton	15.5	14.9	15.4	15.4	15.4	15.3	15.3
OTANA	13.8	12.9	13.7	13.9	13.8	13.6	13.6
PAUL	21.3	18.5	21.3	19.9	20.6	20.0	20.3
Pinnacle AC	--	--	--	12.9	--	--	--
Reeves	--	--	--	17.1	--	--	--
Ronald AC	--	--	--	15.0	--	--	--
YOUNGS	15.2	14.4	15.9	15.4	15.6	15.3	15.3
Beach	**14.5**	**13.6**	**14.8**	**14.5**	**14.7**	**14.4**	**14.4**
Loc. Yrs.	7	6	8	9	17	23	30

19d. Exhibit D. Additional Description of Variety

Table 6. 2000-2003 Oat stem rust evaluation of cultivars similar to Beach.

	Fargo Field 2002			2003	Green House Seedling Evaluation				
	Yield Plot		Hill	Hill	2000	2001	2002		2003
Cultivar	Rep 1	Rep 2	Plot	Plot	NA67	NA67	NA67	NA27	NA67
	----------% Sev. ----------				-------- Infection Type --------				
AC Assiniboia	TS	20S	MS	80S	4	4	4	2	4
EBELTOFT	5S	TS	MR-MS	20S			4	2	4
HiFi	5MR-S	5MR-MS	MR-MS	20S	?	;	3	1	2
HYTEST	60S	20S	S	60S	3		4	4	4
JERRY	5S	10S	S	60S	3		4	2	4
AC Kaufman	--	--	--	60S	--	--	--	--	4
KILLDEER	5MR	10S	MS		4		4	1	4
AC MEDALLION	10S	5MR-S	S	80S	4	4	4	1	4
Morton	5S	5S	MS	80S	4	4	4	2	4
OTANA	60S	60S	S	80S	4		4	4	4
YOUNGS	5MR-MS	10R-MS	MR-MS	60S	4		4	1	4
Beach	**60S**	**20S**	**MR-MS**	**60S**	**3**		**4**	**2**	**4**

19d. Exhibit D. Additional Description of Variety

Table 7. 2000-2003 Oat crown rust evaluation

	Fargo Field Results				Greenhouse Seedling Evaluations				
	2000	2002	2003		2000	2001	2002		2003
Cultivar	Yield Plot	Yield Plot	YieldPlot	Hill Plot	Composite	Comp.	Comp	Comp+	Comp
	% Severity				Infection Type				
AC Assiniboia	OR		0R	10MS	;	;	;/1-4	;	;
EBELTOFT	20MR-MS		10MR-MS	40MR-MS	;/3-3?	4	4	3	4
HiFi	OR		0R	0R	;/2-2	;/1-4	;/1-3	;/1-3	;
HYTEST	40MS		20MR-MS	60S	3	3	4	3	4
JERRY	60MS	20MR-MS	20MR-MS	60S	3	4	4	3	4
AC Kaufman			0R	0R					;
KILLDEER	40MR-MS	40MS	60S	60S	3	4	4	3	3
Loyal	OR		TR-MR	10MR-MS	3	2	2	3	3
AC MEDALLION	OR		0R	0R	;	;	;	;	;
Monida	100S	100S	60S	80S	4	4	4	4	4
Morton	OR		0R	0R	;	;	;	;	;C
OTANA	100S	80S	7/4 80S	100S	3	4	4	4	4
PAUL	10MR-MS		5MS	20MR	4	4	4	4	4
YOUNGS	40MR-MS		20S	40MS	4	4	4	3	4
Beach	**20MR**	**20MS**	**10MR-MS**	**20MR-MS**	**2**	**4**	**4**	**3**	**3**

Table 8. Seedling crown rust infection type resulting from inoculation with critical pathotypes.

	Pathotype of Crown Rust Inoculum				
Cultivar	CR13	CR36	CR254	NDCRM	NDCRA
	Infection Type				
Assiniboia	;	;	4	;	4
EBELTOFT	;	;	4	4	4
HiFi	;	;	;	;	;
HYTEST	3	4	4	4	4
JERRY	;	;	4	4	4
AC Kaufman	;	;	4	;	4
KILLDEER	;	;	4	4	4
Loyal	3	3	4	2	2
AC MEDALLION	;	;	4	;	4
Monida	4	4	4	4	4
Morton	;	;	4	4	;
OTANA	3	4	4	4	4
YOUNGS	;	;	4	4	4
Beach	;	;	**4**	**4**	**3**

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

Application is required in order to determine if a plant variety protection certificate is to be issued *(7 U.S.C. 2421)*. The information is held confidential until the certificate is issued *(7 U.S.C. 2426)*.

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
NDSU Research Foundation	ND951394	'Beach'
4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP, and Country)*	**5. TELEPHONE** *(Include area code)*	**6. FAX** *(Include area code)*
C/O Executive Director 1735 NDSU Research Park Drive P.O. Box 5002 Fargo, ND 58105-5002	(701) 231-8931	(701) 231-6661
	7. PVPO NUMBER	

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. **If no, please explain.** ☑ **YES** ☐ **NO**

9. Is the applicant (individual or company) a U.S. national or a U.S. based company? **If no, give name of country.** ☑ **YES** ☐ **NO**

10. Is the applicant the original owner? ☐ **YES** ☑ **NO** **If no, please answer one of the following:**

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?
☐ **YES** ☐ **NO** **If no, give name of country**

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?
☑ **YES** ☐ **NO** **If no, give name of country**

11. Additional explanation on ownership *(Trace ownership from original breeder to current owner. Use the reverse for extra space if needed)*:

See additional Exhibit E - Statement of the Basis of the Applicant's Ownership included in the application.

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.

2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.

3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

19e. Exhibit E. Statement of the Basis of the Owner's Ownership

Dr. Michael S. McMullen, an employee of the North Dakota Agricultural Experiment Station and North Dakota State University, is a plant breeder who developed 'Beach' spring oat for which Plant Variety Protection is hereby sought. The employee by agreement and because of the condition of the use of facilities and funds of the North Dakota Agricultural Experiment Station and North Dakota State University has assigned all ownership rights to Beach oat to the North Dakota Agricultural Experiment Station and the North Dakota State University.

North Dakota State University on behalf of the North Dakota Agricultural Experiment Station has assigned all ownership to the NDSU Research Foundation. NDSU/RF is a nonprofit corporation set up to own and manage the intellectual property of North Dakota State University.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

EXHIBIT F
DECLARATION REGARDING DEPOSIT

NAME OF OWNER (S)	ADDRESS *(Street and No. or RD No., City, State, and Zip Code and Country)*	TEMPORARY OR EXPERIMENTAL DESIGNATION
NDSU Research Foundation	1735 NDSU Research Park Drive Fargo, ND 58105-5002	ND951394
		VARIETY NAME 'Beach'
NAME OF OWNER REPRESENTATIVE (S)	ADDRESS *(Street and No. or RD No., City, State, and Zip Code and Country)*	FOR OFFICIAL USE ONLY
Dale Zetocha Executive Director	1735 NDSU Research Park Drive Fargo, ND 58105-5002	PVPO NUMBER 200700044

I do hereby declare that during the life of the certificate a viable sample of propagating material of the subject variety will be deposited, and replenished as needed periodically, in a public repository in the United States in accordance with the regulations established by the Plant Variety Protection Office.

Signature _____ Date _____